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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,556

04/03/2006

Yuji Tashiro

2003JP322

2066

26289

7590

03/17/2008

AZ ELECTRONIC MATERIALS USA CORP.  
ATTENTION: INDUSTRIAL PROPERTY DEPT.  
70 MEISTER AVENUE  
SOMERVILLE, NJ 08876

EXAMINER

MCCALL SHEPARD, SONYA D

ART UNIT

PAPER NUMBER

2813

MAIL DATE

DELIVERY MODE

03/17/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/574,556	<b>Applicant(s)</b> TASHIRO ET AL.	
	<b>Examiner</b> SONYA D. MCCALL SHEPARD	<b>Art Unit</b> 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

*This office action is in response to the applicant's RCE filed on 12 February 2008.*

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12 February 2008 has been entered.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under

37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 5, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tashiro (JP 2002-293941) in view of Babich et al. (US 5,141,817).

With regard to claim 5, Tashiro discloses a layer formed by curing a composition comprising a silicon-containing polymer, wherein 5% to 100% by mole, based on the total number of moles of silicon contained in the silicon-containing polymer, of silicon is contained in a disilylbenzene structure, further where the silicon-containing polymer has a carbon content of not less than 30% by weight (paragraph 68, discloses a carbon content of 57% by weight) and further where the layer is cured at a temperature in the range of 200°C to 500°C (paragraph 11). Tashiro does not disclose curing the silicon-containing polymer for 30 to 50 minutes, nonetheless it would have been obvious to one having ordinary skill in the art at the time the invention was made to cure the polymer for 30 to 50 minutes, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233 (CCPA 1955).

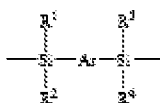
Although Tashiro does not disclose an etching stopper layer, a newly discovered property does not necessarily mean the product is unobvious, since this property may

be inherent in the prior art. In re Best 195 USPQ 430 (CCPA 1977). It is elementary that the mere recitation of a newly discovered function or property, inherently possessed by things in the prior art, does not cause a claim drawn to distinguish over the prior art. Additionally, where the Patent Office has reason to believe that a functional limitation asserted to be critical for establish novelty in the claimed subject matter may, in fact, authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on. In re Swinehart 169 USPQ 226 (CCPA 1971).

In addition, Tashiro does not disclose a process for producing a semiconductor device, comprising the steps of: forming an insulating layer and an etching stopper layer on a substrate; removing part of the insulating layer by dry etching; and filling an electrically conductive material into a groove or hole thus formed. However, Babich et al. in figures 1-8 and related text teach a process for producing a device for electronic applications comprising the steps of forming an insulating layer (2) and an etching stopper layer (14) on a substrate; removing part of the insulating layer by dry etching (column 6, lines 2-4); and filling an electrically conductive material (24) into a groove or hole. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the process and structure of Babich et al. with the process and structure of Tashiro. The motivation for doing so is to create a polyimide structure for electronic applications having electrical conductors embedded therein and a

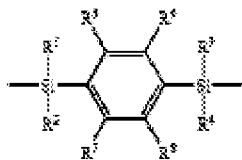
polymeric layer resistant to reactive ion etching as mentioned in Babich et al. column 1, lines 10-16.

With regard to claim 19, Tashiro discloses a disilylbenzene structure represented by formula (I)



where R<sup>1</sup> to R<sup>4</sup> each independently are selected from hydrogen, an alkyl group, an alenyl group, a cycloalkyl group, an aryl group, an aralkyl group, an alkylamino group, and an alkylsilyl group, and Ar represents an aryl group (paragraphs [0010]-[0013]).

With regard to claim 20, Tashiro discloses a disilylbenzene structure represented by formula (II)



where R<sup>1</sup> to R<sup>4</sup> each independently are selected from hydrogen, an alkyl group, an alenyl group, a cycloalkyl group, an aryl group, an aralkyl group, an alkylamino group, and an alkylsilyl group; and R<sup>5</sup> to R<sup>8</sup> are independently selected from hydrogen, a C<sub>1</sub> to C<sub>3</sub> alkyl group, a halogen atom, a C<sub>1</sub> to C<sub>3</sub> alkoxide group, and a C<sub>1</sub> to C<sub>3</sub> amino group (paragraphs [0010] - [0013]).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to SONYA D. MCCALL SHEPARD whose telephone number is (571)272-9801. The examiner can normally be reached on Monday to Friday from 8:30 to 5:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/S. D. M./  
Examiner, Art Unit 2813

/Carl Whitehead Jr./  
Supervisory Patent Examiner, Art  
Unit 2813